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ABSTRACT

In recent years, research on classroom climate has focused on developing instruments to measure the relationships between student perceptions of classroom climate and learning outcomes. However, very little has been done to help teachers improve their classroom climates. This paper presents findings of a study that attempted to improve classroom climate by means of a written program aimed at elementary school teachers. The effects were measured directly using teacher self-reports and indirectly using student reports. An experimental and a control group were created, containing a total of 44 teachers and 1,221 elementary school students. The intervention involved a pre- and post-test of climate perception using the ATMOSAUL questionnaire containing 7 scales: material environment, rule clarity, efficiency, behavioral personalization, intellectual personalization, affectivity, and familiarity. Data show that the teachers in the experimental group changed their perceptions and evolved toward a more critical, detailed assessment of classroom climate in their classes. Their students perceived a statistically significant improvement compared to students in the control group. During the following school year, the experimental group of teachers observed positive effects, attributing the improvement to changes in their performance brought about by participation in the program. Ten figures and 2 tables are included. (Contains 42 references.) (Author/LMI)

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IMPROVING CLASSROOM CLIMATE

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Classroom climate is a subject of topical interest in current educational research. In recent years research has focused on the development of instruments for measuring classroom climate perception, in an attempt to establish the relationships between student perceptions and learning outcomes. However, very little has been done to help teachers improve their classroom climate. In our research we attempted to improve the climate by means of a written programme aimed at elementary school teachers. The effects were measured directly using teacher self-reports, and indirectly using reports made by students. An experimental and a control group were created (with a total of 44 teachers and 1,221 elementary school pupils). The pupils were unaware that their teachers were taking part in the programme. The basic design of the intervention involved a pre- and post-test of climate perception using the ATMOSAUL questionnaire containing 7 scales: material environment, rule clarity, efficiency, behavioural personalization, intellectual personalization, affectivity and familiarity. Results show that the teachers in the experimental group changed their perceptions, evolving towards a more critical and detailed assessment of classroom cliamte in their classes. Their students perceived a statistically-significant improvement, compared to the control group. During the following school year positive effects were observed by the experimental group teachers, who attributed this improvement to changes in their performance brought about by participation in the programme.

1. Introduction

The study of classroom climate has become one of the fastest-growing and most interesting areas of research in the field of education. It could be said that, in the teaching-learning situation, the climate generated in the classroom is one of the most crucial quality aspects. This view is based on evidence provided by research conducted over the last 40 years, which has gradually unravelled the importance and usefulness of this field of study. An overview of progress in research and of the main contributions can be found in Fraser (1986a; 1989; 1991); Waxman (1991); Chavez (1984) and Anderson (1982).

During the 1980s, a series of works aimed to help teachers improve the classroom environment (see, for example, Fraser and Deer, 1983; Fraser, Seddon and Eagleson, 1982; DeYoung, 1977; Fraser and O´Brien 1985). The works showed how feedback of pupils' and teachers' perception of the learning climate provide the latter with clear and simple knowledge of the characteristics of the classroom and helped optimise the learning environment. Such works were based on knowledge of the relationship between the classroom learning environment and pupils' cognitive and affective learning (see Haertel, Walberg and Hartel, 1981; Fraser and Fisher 1982; Fraser et al., 1987; Walberg, 1981).

The usefulness of information on classroom climate for the introduction of improvements can be gauged also from research work conducted in the 1990s on the utilisation of the learning environment as a useful tool in teacher training (Villar, 1992g; Burder and Fraser, 1992; Duschl and Waxman, 1991) and in curricular innovation assessment (Villa 1992b; Fraser, 1986b).

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Our own work relates to the specific area of classroom climate improvement and is motivated by a desire to move away from studies which focus on the description of the main characteristics of classroom climate and towards research which, from the intervention angle, will help produce useful improvement models.

Our work is part of the overall research work undertaken in the Department of Educational Psychology at the University of La Laguna, aimed at providing elements to help improve the teaching-learning process. The success of instructional programmes designed to enhance personal and intellectual development in schools[1], encouraged us to draw up a programme which would serve to improve climate.

Classroom climate provides us with a plural and global approach to the teaching-learning process in that it renders possible the integration of the various elements present in the instructional scenario. We have given thought to a way to conceptualise the climate and render it operational, on the basis of the main characteristics of the instructional scenario. We have also drawn up a set of dimensions which relate to instructional and relational variables and which have proven to be crucial to the generation of the classroom climate. These are subdivided into 7 subscales (material environment, rule clarity, efficiency, behavioural and intellectual personalisation, affectivity, familiarity) which correlate with the three basic dimensions proposed by various researchers (Fraser, 1991).

These dimensions form the bases of the ATMOSAUL Classroom Climate Questionnaire[2]. Validation of the questionnaire was the primary objective of the research, in order to arrive at an instrument which would enable us to gauge and evaluate the classroom climate with a view to improvement. Our instrument proved valid for discrimination and was seen to possess satisfactory internal consistency (see results in Table 1 in appendix).

2. Intervening to improve classroom climate

Which intervention model is used for classroom climate improvement? The role of the teacher is vital in any improvement. According to recent teacher-role appraisals, the teacher is an organiser of optimum learning situations. The teacher can determine one or other type of classroom climate depending on his decisions, style and practices and on his interaction with his pupils (Medina 1989; Davis and Thomas 1992; Fraser and Tobin 1991; Villa 1992a). In this regard, Moos (1979, p. 256) notes that "the teacher appears to be more important than the characteristics of the pupils in climate creation".

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[1] The full Spanish names are as follows: "Programa Instruccional Motivacional para esencializar, estructurar y elaborar el Estudio, PIME-3" (Hernández and García, L. 1991); "Programas Instruccionales Emotivos de tipo cognitivo-motivacional, dirigidos a la educación socioafectiva y a la prevención de la salud mental desde la escuela, PIELE, PIELE-PA, PIE-CAP" (Hernández, P. and Aciego, R 1990; Hernández, P. and Santana, L. 1988, Hernández, P., Aciego and García, 1991). The questionnaires have been published by TEA Ediciones, S.A.

[2] The ATMOSAUL comprises 50 bipolar items, semantic differential,– distributed in 8 items per subscale, except for material environment, which consists of only 2. The questionnaire is answered using a 7-point scale on which respondents rate their degree of agreement with the statements presented (Muñoz de Bustillo, 1995).

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Efforts aimed at teacher improvement of classroom climate take as their point of reference features seen to be relevant in the various teacher-centred approaches, as indicated by Fraser (1986). Fraser and Fisher (1986) note the paucity of studies which focus on the use of pupils' perception of climate in order to improve the classroom climate. Those studies which have been conducted justified themselves in part by the assumption that pupil conduct improves in a preferred environment. The approach is based on using the discrepancies between pupils' perception of the actual and preferred climates, with the teacher then using strategies that help reduce the discrepancies. The improvement process follows five basic steps: measurment, feedback, reflection and discussion, intervention and measurement/feedback (see, among others, Fraser 1986b, p. 172-174).[3]

The intervention model used in the present work differs from the previous one in two fundamental respects:

1) The feedback source includes pupil and teacher perception of the actual climate. The discrepancies between the opinions of both (pupils and teacher) are the fundamental elements for reflection and for the implementation of change by the teacher (Centra 1972, Gage 1974; Aleamoni 1978; Fraser 1986b; García, A. 1987) and for the integration of the principle of motivational cognitive dysequilibria in the notion of intervention (Hernández, 1986). In this respect, our approach is closer to the model proposed by Dutka and Marggraf (1987). As these authors note, the approach is justified becuase it is a "systemic approach, the classroom climate is understood as being the subjective psychological situation of pupils and teachers in the teaching process. In these systems of interconnected variables, feedback processes take on crucial importance. Feedback is a key element. Thus, it is important to understand and stimulate feedbacks in the context of teacher-pupil interaction in order to improve classroom climate" (p. 298).

2) A second differentiating feature is on the structural level. Both reflection by teachers and the taking of change decisions must relate to the teachers' notions and cognitions on teaching and on pupils. A useful tool exists in the shape of Written Instructional Programmes which, through the presentation of information and experiential involvement, allow the teacher to analyse and be aware of his cognitions and establish or set himself improvement commitments.

As Hernández points out (1993, pp. 408, 409), the advantages and features of written instructional programmes are as follows:

a) The level of structuring of an intervention programme not only facilitates its application but also enables it to become a standardised instrument which might be used by different professionals in a variety of fields; b) information contained in the programmes should conform to the most efficacious psychoeducational criteria; c) the instructional means used can respond to three criteria: the linguistic medium (enunciative or narrative); the communication vehicle (oral, written or audiovisual); and the participation procedures, which can be oral (individual interview or group-based), written and behavioural (drama-based techniques, training in specific skills); d) they are based on cognoscitive-motivational techniques.

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[3] Note that there are some variations in the method, examples being the research conducted by Burden and Fraser (1992) and Dutka and Marggraf (1987).

The following defining characteristics of the programme can be identified:

* The programme is aimed at teachers. Involvement is didactic, experiential, elaborative and commitment-based. The linguistic medium used is enunciative; the communication vehicle is written and oral; form of participation is written, oral, group-based or individual interview.

* The programme is conducted under instructor guidance. It comprises 6 units: one by way of introduction and 5 others, corresponding to each of the dimensions of the ATMOSAUL questionnaire. Each unit is accompanied by a chart profile of the average scores obtained by the class and the teacher.

* The units were designed along the lines of the psychoeducational principles proposed by Hernández (1993): 1. Each unit is divided into sections which focus on a key idea, thus facilitating step-by-step learning; 2. In each unit direct information procedures are used (summaries, examples, analogies and redundancies) to facilitate direct communicability; 3. The procedures used related directly to personal experience; individual elaboration, via the generation of questions based on the information and written reflections, as well as exchange of experiences and points of view. This aspect facilitates motivational conditions. 4. Each unit ends with change commitments.

* As regards the working mode used in the programme, and taking into account the training demands made by teachers, we organised a collective mode (small groups) and also an individual format. In the individual format the teacher met with the instructor on a one-to-one basis, while in the collective mode the latter met with a group of teachers and ideas were shared on ways to improve the climate.

Lastly, it is important to note the relevance of quality indices for successful intervention. These must be encouraged and taken into account in the design of the intervention programme if success is to be assured. Examples include proper organisation and coordination of the programme; the prior generation of positive but adequate expectations, with clarification of the intervention goal; consideration of teachers' opinions and beliefs; the establishment of conditions which will favour good personal relationships; the role of the instructor as a dynamic element.

Given our utimate objective, namely, to help teachers improve classoom climate, it was rewarding to see that the teachers who took part expressed a keen interest in, and stressed the importance of, intervention of this type. Furthermore, they pointed out that it was an issue which was of concern and interest to them.

3. Objectives and methodology

Our objective was to implement a written instructional programme aimed at teachers, with a view to improving classroom climate during a school year. We also hoped to verify the short and medium-term effectiveness of tne programme. Within this overall objective we had three more specific goals:

- First, to establish a baseline, ie, to ascertain how climate was perceived initially by pupils and teachers, and to verify the short-term effects (at the end of the intervention)

of the programme on a) the teachers b) the pupils and c) on teachers and pupils jointly.

- Second, we wished to check the medium-term effects of the programme on the teachers. To do so, we monitored the teachers' own perception of their action during the first few months of the school year.

- Third, we wanted to learn the teachers' own assessment of the programme.

The investigation was conducted with a sample of 1,221 pupils (50 classes) and 44 Elementary School teachers (teaching years 6, 7 and 8) in 7 schools. The sampling method used was of the non-probabilistic type with an incidental or casual criterion. In other words, easy access subjects -in this case, volunteers.

A quasi-experimental type design was planned, with independent groups and two treatment conditions (experimental group, 21 teachers and 21 classrooms, and control group, 23 teachers and 29 classrooms). This enabled us to manipulate the dependent variable and see the effects on the dependent variable. The dependent variable was the application of the classroom improvement programme, with two implicated levels; in the experimental group, the programme was administered individually or collectively, whereas in the control group the programme was not administered. The variable dependents were a) evaluation of classroom climate by teachers and pupils, measured using the ATMOSAUL questionnaire; b) the degree of difficulty of change implementation, as perceived by the teachers, measured by means of an ad hoc questionnaire; and c) teachers' perception of their actions and the type of attribution of success or failure in a new school year, measured by means of the ATMOSAUL.R (a shortened version of the ATMOSAUL questionnaire).

The procedure used was as follows: after the pre-intervention application of the ATMOSAUL questionnaire to teachers and pupils of both groups, the intervention proper was commenced, with the implementation of the Classroom Improvement Programme with teachers in the experimental group. This lasted approximately 4 months. On completion of this, the post-intervention application of the ATMOSAUL questionnaire was carried out with all the teachers and pupils in the different schools. At the beginning of the new school year, the medium-term effects on teachers were measured using the ATMOSAUL.R questionnaire. The results obtained during the previous year were notified individually and collectively (school).

Statistical Analysis. The following statistical procedures were used in the present study:

a) Mean differences with the Student T-test: this allows us to see if there are any significant intragroup and intergroup differences in initial climate perception, in the time variable (before and after the treatment) in each of the sub-scales comprising the ATMOSAUL questionnaire, and in the general climate. It also allows us to see if there are significant intergroup differences with regard to the "success or failure" attribution factors made by the teachers. The criterion for acceptance of significant differences was established in the following probability classification: 0.1, 0.05, 0.01, 0.001.

b) Univariate and multvariate analysis of variation (ANOVA and MANOVA): these enable us to ascertain the influence of the independent variable (group type) on the

dependent variables; the climate score in each of the subscales and in the general climate, and the perception of their own actions using the ATMOSAUL.R questionnaire.

c) Chi-square. This allows us to see if there are significant differences between the distribution of improvements in the two groups.

d) Factorial analysis: this enables us to find a series of factors of the original variables of attnbution of improvement and non-improvement which explain the common variance between them, in order to determine the data structure.

e) Analysis of discriminant function: this enables us to find the linear combination of attribution variables that maximises the difference between the teachers of the experimental group and the control group, and, additionally, predicts membership of one or other group on the basis of said variables.

4. Results

In the case of the establishment of the baseline, ie, the climate as initially perceived by teachers and pupils, there were no significant differences before the application of the programme between the teachers in both groups or between the pupils in the experimental and control groups. However, significant differences were detected between teachers and pupils, both in the experimental and control groups.

This finding, which coincides with many other investigations, is illustrated in figure 1a/b. As can be seen in the experimental group example, teachers perceive a more positive climate than pupils. The same occurs in the control group. However, there is no discrepancy between the aspects relating to the task (efficiency) and the material environment context. The material environment subscale has been excluded purely to make the figure clearer, given that the average values for both items are much smaller.

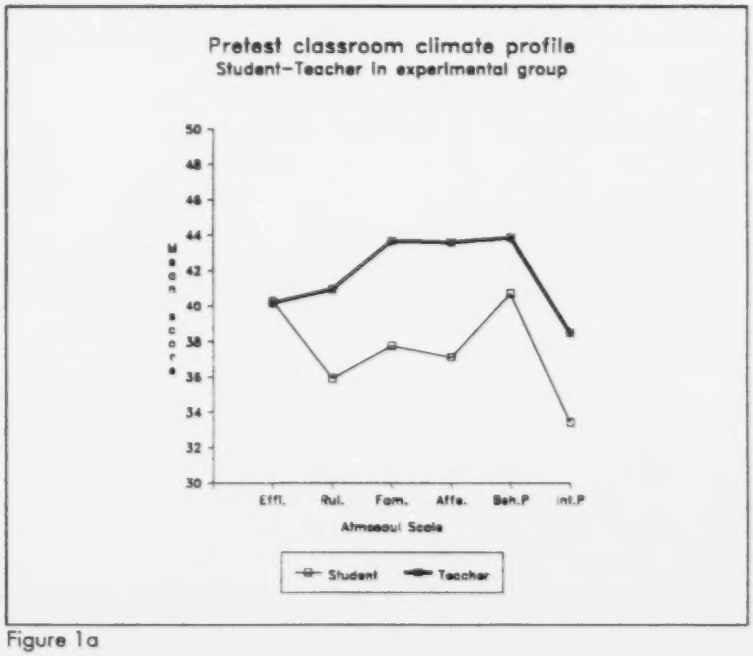

Figure 1a

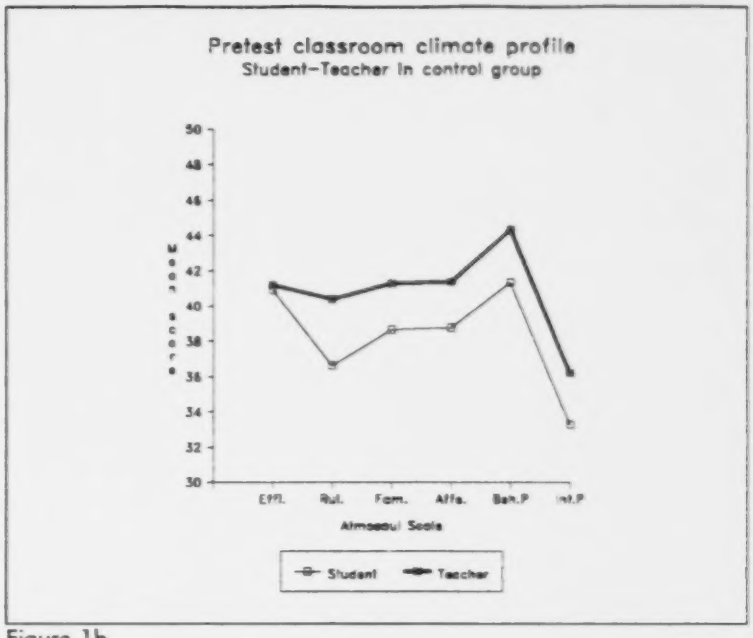

Figure 1b

Short-term effects of the programme:

A) The first effect noted was a change in the teachers' perception and assessment of the climate

It was expected that the experimental group's self-perception of climate would be more positive after the intervention than that of the control group. However, the results indicated the opposite. In the experimental group (see figure 2a/b) the results were apparently worse. Teachers in this group had a more negative perception of climate, whereas those in the control group were slightly more positive.

This (apparently surprising) result is due to the change of criterion which emerged as a result of the programme. The change in self-perception stems from the deeper knowledge and analysis of what is entailed in each of the elements in the studied climate. In this regard, the programme facilitates clarification of certain types of actions, eliminating mistaken or naive ideas concerning implementation.

This change of criterion is confirmed by the experimental group's greater difficulty in achieving a better climate compared to the teachers in the control group. Figure 3 shows also that this effect was seen in virtually all the subscales, with the exception of the material environment.

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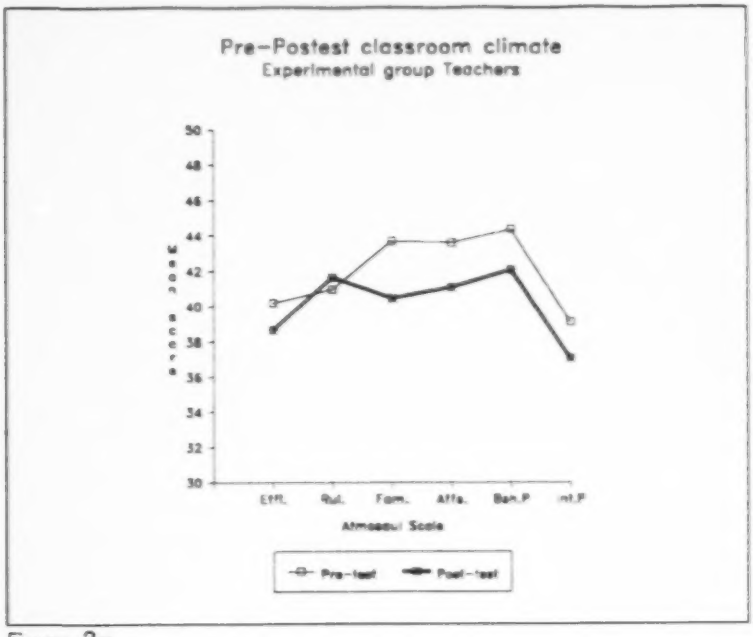

Figure 2a

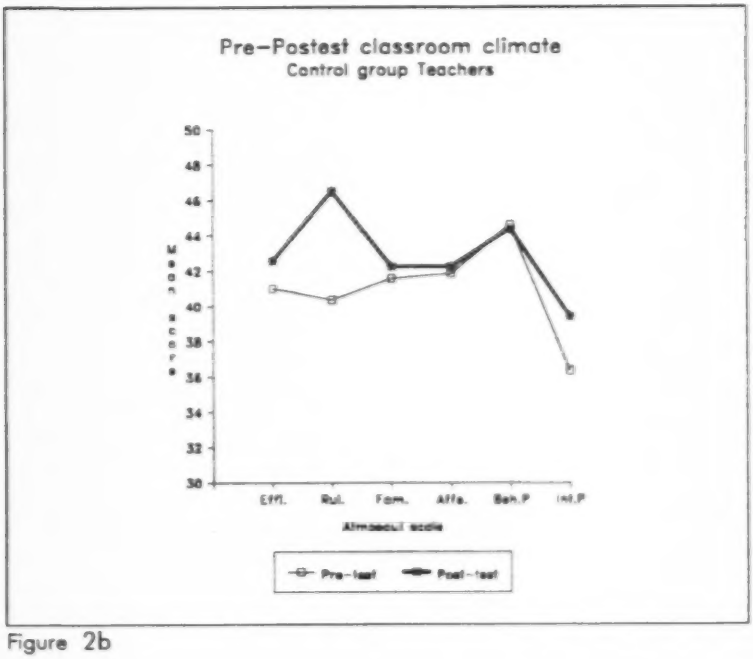

Figure 2b

Change in perception and assessment in the teacher is a first necessary step for the implementation and transformation of classroom change. The first change must take place internally or cognitively in order to propitiate the introduction by the teacher of change within the classroom setting. Recalling Jakubowski and Tobin's three cognitive processes (1981), we consider that the change seen in the experimental group compared to its control counterpart is indicative of the fact that the programme does

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act on this cognitive process. The programme fosters reflection by the teacher on the elements and conditions propitious to a favourable climate because the information contained relates to his own experience and his ideas and concepts. This results in the integration of the new views and an involved commitment to change.

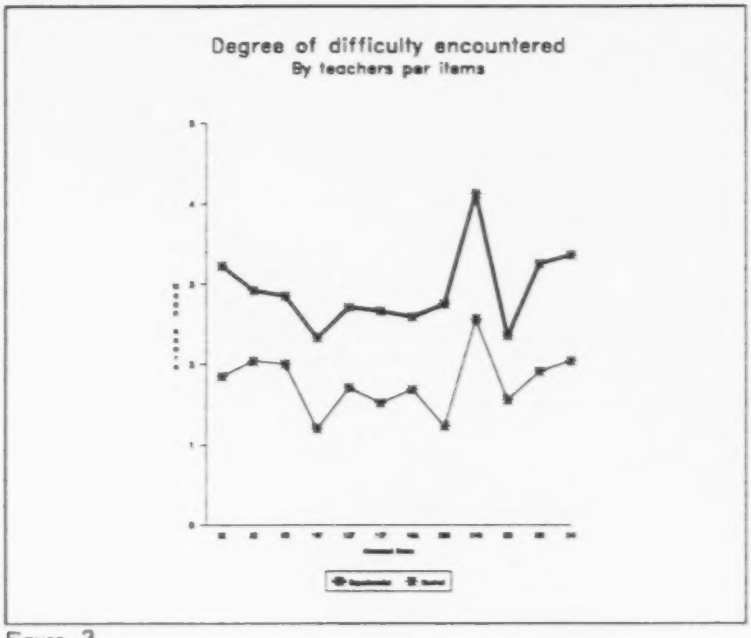

Figure 3

The fact that it is not possible to verify the hypothesis concerning improvement in teachers' self-perception of climate, as was discussed above, does not mean, in our opinion, that such a change has not actually commenced. It reflects rather that a change has begun to operate in these teachers.

The initial results indicate that the programme does influence teachers on the level of their assessments and perceptions. Even though this was the first important effect, we did not know whether this internal change in the teacher would actually manifest itself externally in the classroom. This doubt could be clarified by examination of the effects produced in the pupils.

B) The results concerning the pupils indicate that a change has taken place in the classroom

We expected to see evidence of a more positive perception of climate among the pupils in the experimental group, compared to their control counterparts.

A greater degree of change tended to be seen (albeit a non-significant tendency) among the experimental group than the control group in virtually all the subscales. As figure 4 shows, the gains are greater in the experimental group.

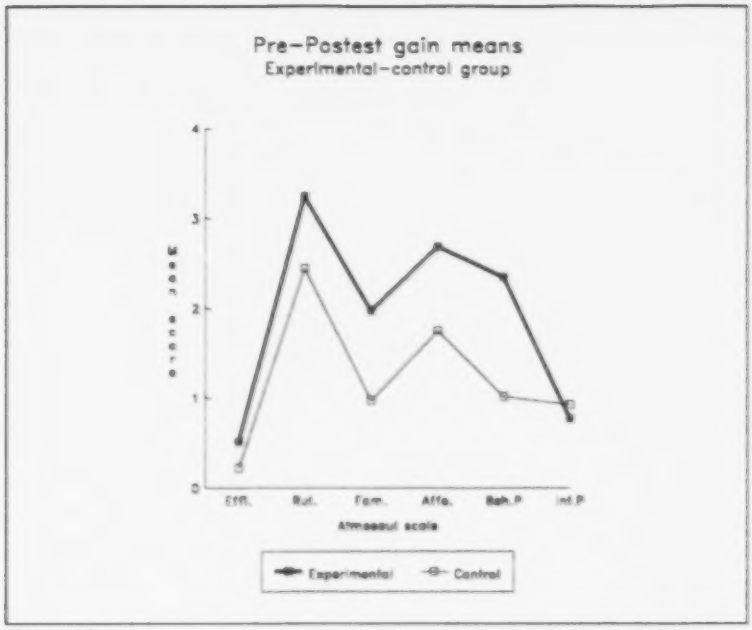

Figure 4

Although the above tendency is present, analysis of the change in the total means for the two groups reveals that the data obtained are not an overly solid indication of a greater change in the experimental group. This tendency is confirmed in the qualitative analysis of the change observed in each classroom in both groups. Put another way, a differentiated change profile is seen among the classrooms under both experimental conditions.

As the table below shows, the range of benefits of classroom improvement is greater in the experimental group, ie, the number of factors or subscales perceived as having improved is higher and the distribution of change is uniform throughout the different climate subscales. Conversely, the range of benefits in the different subscales is lower among the control group (a lower improved subscales average) and the distribution of the improvement is more heterogeneous, and concentrated on certain subscales, rule clarity, for example.

It was expected that, during the school year, teacher-pupil contact and teacher action would favour a positive change in classroom climate in the control group. However, the change was expected to be irregular, ie, focused on habitual aspects for the teacher, such as material environment, rule clarity and/or familiarity. Participation in the programme should make its effects felt in a type of improvement characterised by modification of a greater number of the elements implicated in classroom climate and in aspects to which less attention is paid or which pass rather more unnoticed in the classroom dynamic. The differentiating characteristics of the change profiles in both groups confirm this view.

SUMMARY OF RESULTS IN PUPILS					
	No. of improved subscales	**Improvement distribution**	**Characteristic improvements**	**Effects per initial perception level**	**Initial perception level in classrooms which improvedlo not improve**
Experimental group	Significantly higher mean	Uniform across subscales	Personalization Familiarity Efficiency	Positive changes in classes with middle and low levels	No differences in initial level between improvers and non-improvers
Control group	Mean lower	Irregular across subscales	Rule clarity Material environment	Change in classes with low initial levels	Differences between classes. Lower levels improve

The data on the characteristic improvements in the two groups, on the comparison between the two of the percentage of classrooms that improved by subscales, show that significant differences were obtained in the efficiency, familiarity and behavioural personalization subscales. The percentage was found to be higher in the experimental group than in the control group. The highest percentage of improvements in the control group was found in the rule clarity and material environment subscales.

A further piece of data which brings out the differentiating profile among the two pupil groups is obtained from analysis of the initial level in the overall climate. In the experimental group, the pupils with lower initial levels, and in particular those with medium levels, perceived a positive change in the clasroom climate, whereas a certain change was perceived in the control group only by those at the lower level. The fact that pupils in the medium and high levels of the control group perceive improvement only in the rule clarity subscale is an indication of the differences established by the programme among the pupils.

The above results show the effect of the programme in that they highlight the importance of the combined action of all the elements in order to propitiate clasroom climate, as opposed to concentrating on one element alone. This requires greater effort on the part of the teacher, since it involves devoting attention and effort to different classroom aspects (the teacher was asked to map out an objective for each of the climate subscales studied). In this regard, the results seen in the classrooms were highly positive, bearing in mind that we are dealing with indirect effects.

We also feel that reflections of changes occurring in the classrooms will be more evident statistically in longer-term interventions. This view was shared by the experimental group teachers, who, when asked about the effect that their participation in the programme would have on the classroom, said that even though a certain effect could be gauged -due to their own change of attitude- they would need more time to translate this change into more explicit objectives and more clear-cut actions.

Hence, the results obtained indicate that the changes observed in the teachers operate not just internally but also on the level of acual classroom action, as evidenced by the differentiated improvement perceived by the pupils.

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C) A third programme effect was seen from the data obtained from the combined analysis of the changes observed by teachers and pupils from the same group. This third results reveals that the programme has an important effect in fostering or promoting congruency of climate perception among the teachers and pupils of the experimental group.

The expected results were confirmed. No significant differences were found between the teachers and pupils of the experimental group, due to the change of criterion used by the teachers and the improvement perceived by the pupils. A certain amount of discrepancy was seen in the rule clarity subscale only. In the control group, the differences between teachers and pupils were maintained and even increased (see figure 5 a/b).

This result is extremely important in the light of the previous findings, given that it indicates that teachers and pupils have a similar perception of their classroom climate after the intervention. This consensus is an important symptom that the classroom dynamic is shared by both sides. In this regard, it is indicative of what Moos (1979) calls the coherent classroom culture. Coherence, ie the same reality experienced, facilitates the proposal of future changes which will be shared by teachers and pupils. It also enables the changes to be made in the appropriate directions for both sides.

We should like to underline this effect of the programme, particularly in view of the fact hat classroom climate research has tended to show that teachers and pupils perceive climate differently, the teachers' usually being more positive. Clearly, this difference in perception and the direction in which it occurs frequently hinders understanding of pupils' behaviour, attitudes and demands, thus preventing efforts aimed at modifying and improving the classroom dynamic, given that for the teacher they are elements which are evidently present in said dynamic.

In this regard, we would underline the appropriateness of using discussion of feedback results, treating the pupils as a further programme element. The intervention models proposed by Dutka and Marggraf (1987) and Burden and Fraser (1992) include this aspect as one of the steps because, according to the authors, it helps bring about more rapid climate improvement. Dialogue with pupils on the results, and discussion of improvements, apear to us to be a valid and interesting alternative in that such action favours direct involvement of the pupils in the improvement process.

Hence, the results obtained in the short term indicate that the change seen in the teachers is not merely internal but operates also on the level of real action, as evidenced by the differentiated improvement observed by the pupils. Similar results have been obtained in research carried out by Dutka and Marggraf (1987) and Burden and Fraser (1992).

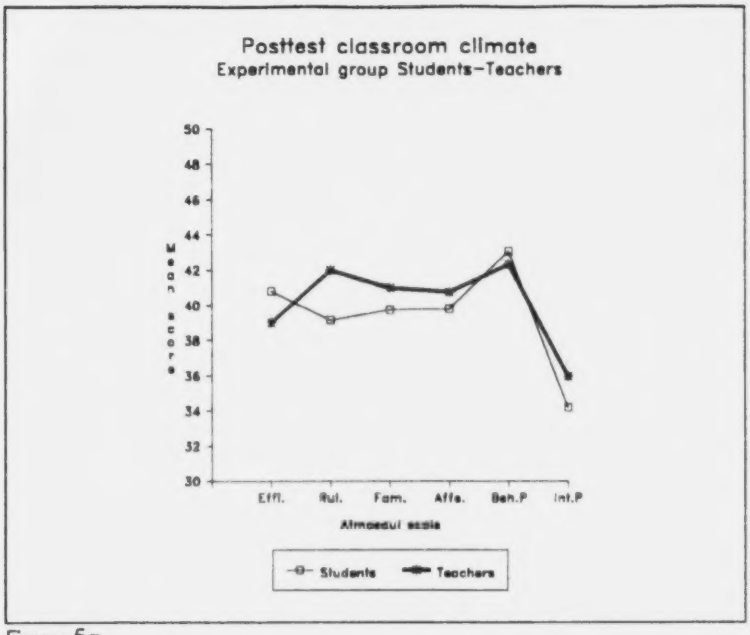

Figure 5a

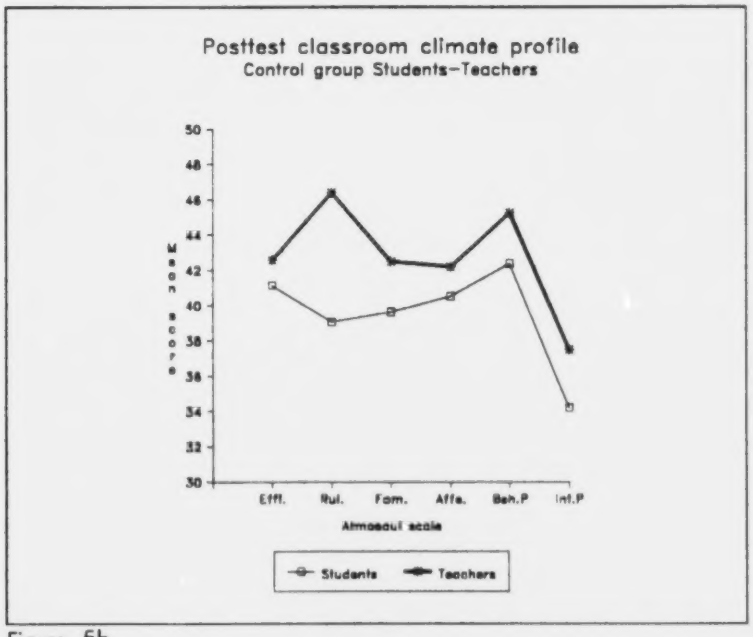

Figure 5b

Turning to the long term effects of the programme:

D) Lastly, since our research made provision for the study of the diachronic dimension, we were able to verify the medium term effects of the programme. The changes observed were maintained beyond those manifested during the school year in which the intervention took place.

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This analysis entails medium-term monitoring (the first two months of the new school year, after the summer holidays) of teachers in both groups.

As expected, positive effects were seen in the experimental group vs. the control group. Teachers in the former group showed significant improvement in their climate-related actions. As figure 6 shows, the experimental group teachers were above their control group colleagues in terms of degree of change, in the items overall. It should be added that, in terms of change in actions, three of the 18 items presented did not produce this tendency in the experimental group.

In the factorial analysis carried out on attribution-type, factor II discriminated significantly (1‰) between the two groups (see figure 7). This tells us that the experimental group is differentiated from the control group because it engages in attributions of improvement and change during the school year, as a result of participation in the programme. The chief cause which the teachers in this group identify as being responsible for the change is their participation in the programme, whereas the control group attribute inability to bring about change to personal or situational causes, such as state of mind, new group of pupils, or the situation in the school itself.

The internal change manifested by the teachers during the school year in which the intervention took place is reflected in the medium-term effects of the programme. In other words, the teachers incorporate the new knowledge into their professional action, linking it up and relating it to their own knowledge and experience. This internalisation is reflected in the fact that in the new school year and with new pupils, ie in a different situation, the experimental group teachers view actions regarding climate-related aspects to be better than the previous year.

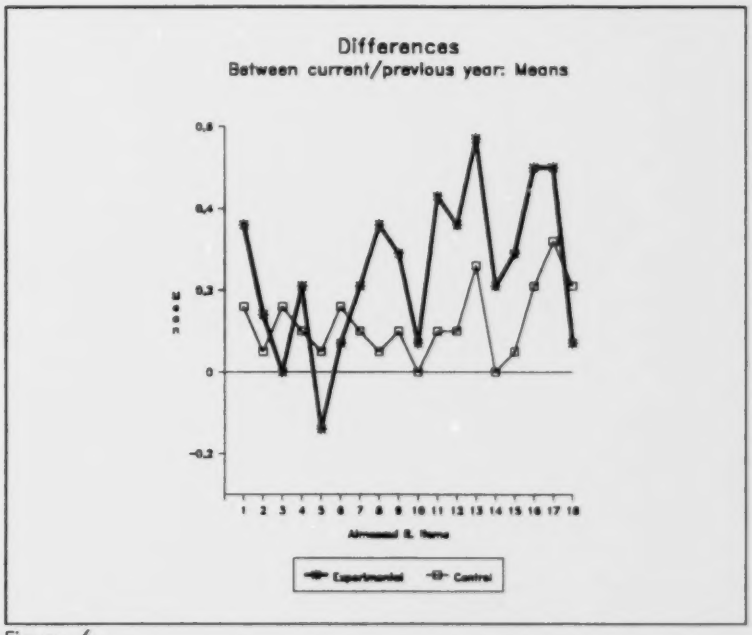

Figure 6

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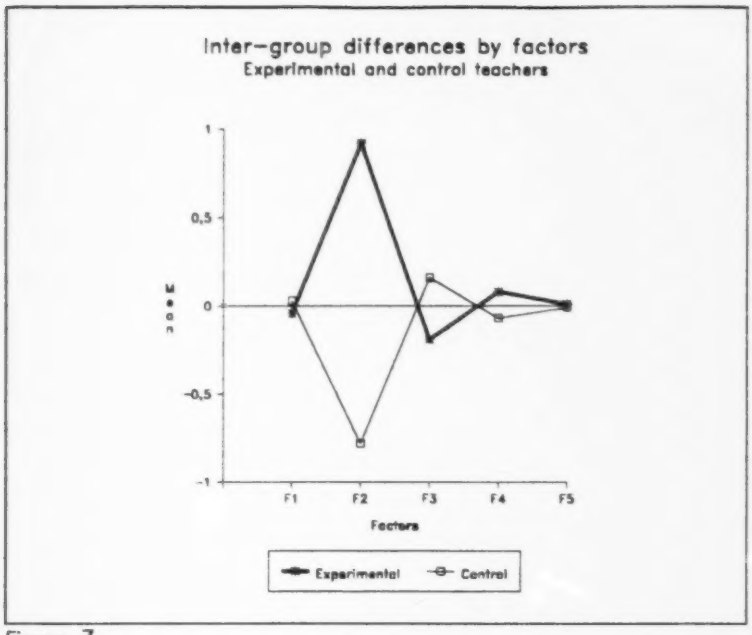

Figure 7

The fact that the teachers in the experimental group do not attribute their current situation to external causes means that they have more control over their teaching; the programme has provided them with greater knowledge and reflection of value in the medium term, and also enables them to implement future improvements, given that the attribution-type in the new situation refers to factors under their own control.

In the majority of cases, the attributions used by the control group teachers would indicate that they see themselves as defenceless and immovable. In our opinion, recourse to this type of explanation -which is quite commonplace among the teachers- evidences general ignorance of how a given climate operates or is generated in a classroom context.

It is worth mentioning also the influence of the school situation in non-change. The Lorsbach research (1992) shows that the school can often inhibit change in teachers and pupils alike. Although acknowledging that the school can indeed represent an element which can either facilitate or hinder individual change in the classroom, and hence there is a need to study both levels (classroom and school), we do feel however that it influences the degree or level of change achieved, rather than determining the suppression or appearance of said change.

This leads us to state that the programme promotes "core" change, in the sense that the reflections generated are not merely situational but rather are internalized in the teachers' own concepts. As Hernández and Aciego show (1990), this type of effect in any programme assessment is highly useful in that it indicates the degree to which the proposed objectives are consolidated.

Teachers' assessment of the programme

We will make brief reference to the assessment given by the experimental group teachers.

With regard to the mode used (collective or individual), although we expected the collective version to afford greater benefits than the individual mode, due to enrichment through peer contributions and opinions, the results show that no differences were established.

This leads us to think that the choice of mode (which was left to the teacher) reflected personal working styles, and these would account for the results obtained. However, given the small numbers involved in both situations the results must be viewed as being approximate only.

As regards the assessment of the programme itself, the teachers were of the opinion that it was adequate both in terms of its form and contents.

In terms of what it contributed or its personal usefulness, the teachers stressed positive effects such as the identification of specific aspects for improvement; curiosity for aspects to which they had not given though beforehand, and new teaching ideas.

Lastly, the teachers were asked to give their opinion on which aspects facilitated or hindered the intervention process. There were three facilitation aspects: personal attitude of receptiveness to reflection and analysis; good interpersonal relationships, and, thirdly, the step-by-step learning process used in the programme, with specific target change elements.

There were two hindrance aspects: firstly, contextual or professional aspects, such as change of group half-way through the intervention, or not being a tutor. Secondly, programme-related aspects, such as the amount of time devoted to each unit and the order of presentation of the units.

When asked about possible solutions, the teachers drew attention to the following: more time to work on each unit; units should be of different lengths depending on difficulty; it would be useful to combine collective and individual work.

Lastly, with respect to the effects of the programme, the teachers felt that, although there may be an indirect effect on the pupils, they themselves were the side most directly affected, in that the programme provided them with knowledge and tools for change.

5. Conclusions

In the belief that classroom climate is important for the development of the learning and teaching process, and that within the climate the teacher's role is crucial, we wished to investigate the effects of a teacher-oriented written instructional programme for classroom climate improvement during a school year, and to check the effectiveness of the programme in the short and medium term.

The results obtained confirm that participation in the programme propitiates and stimulates climate improvement in the latter years of primary education. These effects were facilitated by the intervention model implemented.

Before concluding, we would like to put forward a number of suggestions with a view to the future. We believe there are a number of aspects which could improve the programme:

* One such element is the inclusion of teacher-pupil dialogue on the results obtained, and the use of this dialogue to map out specific change objectives. The research by Burden and Fraser (1992) underlines the usefulness of dialogue in intensifying and speeding up change.

* Secondly, consideration should be given to the question of increasing the time devoted to each unit, perhaps also adding an information file on the psychopedagogical fundaments on which the unit is based.

* Lastly, in order to facilitate implementation and correction by the teacher, the ATMOSAUL questionnaire might be simplified.

With regard to other possible uses of the programme, the following comments may be of interest:

* The programme can be used to create an awareness of the elements which comprise and contribute to a good learning climate. This enables it to be used in the early stages of teacher training. Moreover, with the emphasis placed by Spain's Education Reform and University Reform Acts[4] on the need to generate good climate, we wonder whether the programme would not also be useful in helping introduce educational innovations. This view is reinforced by the results obtained by Villa (1992) in schools which have adopted the new education system.

* Lastly, we feel it would be of interest to include measures concerning perception of the school climate. Research by Fraser and Rentaul (1982), Fraser, Williamson and Tobin (1987), and Docker, Fraser and Fisher (1989) show the relationship between school and classroom climate. The findings of Lorsbach (1992) underscore the influence of school climate on individual change in classrooms and point to the need for interventions which combine both levels of analysis.

[4] Full names in Spanish: Ley de Organización General del Sistema Educativo (LOGSE), which is currently in the process of implementation in schools, and Ley de Reforma Universitaria (LRU).

Appendix

Discriminant Validity (correlation scale and mean correlation of a scale with other ATMOSAUL scales.) and Internal Consistency (alpha reliability)

	1	2	3	4	5	6	7	Mean correl.	Alpha
1	1.0000	0.1720	0.1282	0.2389	0.1093	0.1820	0.2343	0.1775	
2		1.0000	0.5364	0.1925	-0.0482	0.3603	0.2735	0.20	0.69
3			1.0000	0.1802	0.0636	0.3986	0.2086	0.1958	0.73
4				1.0000	0.4702	0.5120	0.2904	0.2828	0.47
5					1.0000	0.2773	0.1543	0.1305	0.82
6						10000	0.4140	0.3460	0.73
7							10000	0.2322	0.45

N= 1208

Atmosaul Scale: 1(material environment); 2 (Efficiency); 3 (rule clarity); 4 (Familiarity); 5 (Affectivity); 6 (behavioral personalization) ; 7 (intellectual personalization)

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